CLIONA LAMPA AND DISTURBANCE ON THE CORAL REEFS OF CASTLE HARBOUR, BERMUDA. *Memoirs of the Queensland Museum 44: 360. 1999:-* On reef regions of Bermuda, one of the most abundant populations of the boring sponge *Cliona lampa* occurs within Castle Harbour. Historically, dredging and landfill for the construction of an airfield (1941-1944) in the harbour caused changes in the coral reef community structure. The resulting increase in sedimentation and turbidity led to mass mortality, changes in species composition and age distribution of the coral (especially for *Diploria* sp.; Dryer & Logan, 1978, Cook et al., 1994). We hypothesised another outcome of this disturbance was an increase in the distribution and abundance of *Cliona lampa* within Castle Harbour. If the sponge was able to invade the space made available by death of the coral colonies, it should be reflected in the extent and type of substrate infested. An *a posteri* field survey of Castle Harbour was conducted to determine the extent and substrate type (coral vs. non-coral in origin) of *C. lampa* infestation. A field experiment was conducted to test the ability of *C. lampa* to colonise *Diploria* sp. with and without live tissue coverage. Results from the field survey and experiment support our hypothesis. Following the disturbance, it appears the increase in substrate availability combined with the decrease in competitors occurred at a time and place that favoured colonisation by the sponge. In addition to algae and corals, sponges may be important to consider when examining alternative states following disturbances in coral reef communities. ❐ *Porifera, Cliona, coral reef communities, disturbance, Bermuda, colonisation.*

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SPATIAL AND TEMPORAL VARIATION OF THE NATURAL TOXICITY IN SPONGES OF A MEDITERRANEAN CAVE: IS THERE A TREND ? *Memoirs of the Queensland Museum 44: 360. 1999:-* Strong intraspecific variation of chemical defenses has been documented for marine seaweeds and, less often, for some benthic invertebrates. The causes and the extent of this variation still remain poorly studied. We present here an extensive study on natural toxicity of sponges inhabiting a sublittoral cave at the Balearic Islands, (Mediterranean). We looked over spatial and temporal patterns at both community and species level.

First, we performed an exhaustive semi-quantitative census of the benthic species present along the cave walls and analysed the species/ abundance matrix by cluster techniques. Three clearly different zones with distinct species assemblages came out from the analysis. We characterised the main abiotic factors of these zones by measuring irradiance, water movement, and particulate organic matter of the water. For the toxicity analysis, we collected at the three zones a minimum of three specimens per species (33 species, 291 specimens). We looked at seasonal variation in toxicity by sampling in June and November 1998. Toxicity was measured by the Microtox assay, which has shown a high performance for assessing natural toxicity in previous studies. We also ran sea-urchin bioassays over randomly selected samples to determine whether toxicity against marine bacteria correlates with toxicity against invertebrate cells. Correlation between both bioassays was always high. Whenever a given concentration of crude extract resulted in Gamma values (=toxicity units in the Microtox assay) above 0.5, it also featured some toxicity against sea-urchin embryos. Thus, we chose this value as a threshold to separate toxic from non-toxic sponges.

We found contrasting trends in the variation of toxicity along the cave with season. At the community level, toxicity values had a tendency to increase as irradiance and substrate occupation decreased (increasing distances from the cave entrance) in June. This trend reversed in November, when lower toxicity was found in the innermost zone. High variances prevented ANOVAs from detecting significant differences in mean toxicity between zones or seasons. In contrast, we detected significant changes (Chi-square statistic) in the number of toxic species among zones between seasons. At the species level, we found significant differences in toxicity among zones and the pattern of variation along the cave also changed seasonally.

Our results proved that spatial and temporal variability in toxicity is remarkably high in Mediterranean sponges. This variability, either genetically determined or environmentally induced, may have important ecological and evolutionary implications in benthic communities. ❐ *Porifera, natural toxicity, spatial and temporal variation, Microtox assay, caves, Mediterranean Sea, benthic communities.*

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